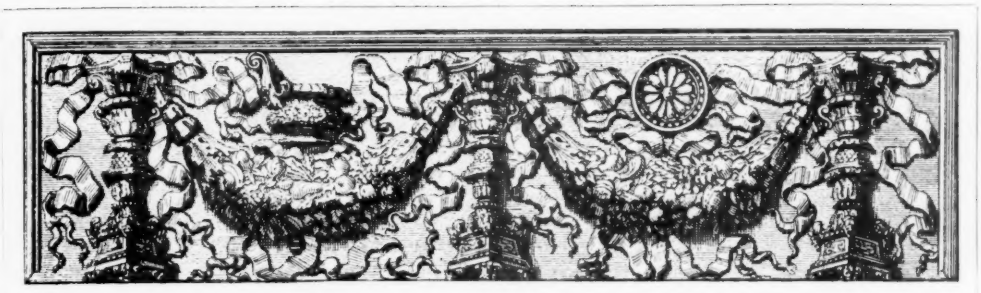


ALFRED WATERHOUSE, R.A., LL.D.

FOUR long years of enforced retirement and gradually increasing paralysis of his physical and mental activities formed the sadly clouded ending to the brilliant professional career of Alfred Waterhouse, whose name has long been a household word in the architectural world. Only those who knew the untiring energy he devoted to every detail of his crowded life's work will fully realise what the sudden divorce from all its many-sided interests must have meant to him. The blow fell in the August of 1901 in the form of a paralytic seizure, and from that time until his death, just four years later, he never again visited London, though, for a long time, he was able to enjoy the air and sunshine in the grounds of his country house, which stands on the high ground between Pangbourne and Newbury.

Alfred Waterhouse was born at Liverpool on July 19th, 1830. His father—also an Alfred Waterhouse, a leading merchant of that city—had married Mary, daughter of Paul Bevan. Both his father and mother belonged to the Society of Friends, and their son was accordingly educated at the Friends' School, Grove House, Tottenham. To his friendships among the most influential and wealthy Quaker families he was largely indebted for the substantial substratum of his practice during the whole of its earlier years.

Articled to a certain Richard Lane, of Manchester, young Waterhouse soon freed himself from the weak classic traditions of the office in which, as a pupil, he obtained his first architectural training; but, at a still earlier period, he had developed that passion for sketching, in both line and colour, which ever after distinguished him. To J. D. Harding, from whom he received lessons, may possibly be traced some of the influences which characterised his vigorous drawing of landscape, especially his very effective rendering of foliage. The choice of architecture as his profession was probably the resultant of two forces—on the one hand his own ardent desire to devote himself to the art of painting, and, on the other, his parents' wish that his energies should be given to a mercantile career. The choice proved an opportune one in every way, for it combined a congenial and absorbing life's work with a reward that falls to the lot of but few.

Fortunate from the first, his pupilage was immediately followed up by a prolonged Continental tour, chiefly in France and Italy; and, in Italy, he met as fellow students some of those who were destined in after years to become his colleagues at the Academy—Leighton and Millais to wit.

On his return to England commissions awaited him at the hands of friends of his family, and he began practice in Manchester in 1853. A few years of miscellaneous work—private

houses, warehouses, &c.—gave him a firm footing, and in 1859 came his first great wave of success, on the crest of which he was carried long afterwards, for it was in that year that he gained the important competition for the Manchester Assize Courts. His competitive design was vastly improved upon in execution, and the final result was one that brought him commendation from all branches of the legal profession, from the general public, and from men such as Ruskin, who looked at the building from a purely artistic standpoint. The architect was allowed carefully to superintend the equipment of the judges' lodgings attached to the Courts, and designed furniture and appointments, even down to the damask table-cloths and china services. For months after its opening the building was daily inspected by such crowds of influential visitors that Mr. Waterhouse once playfully remarked upon the post of curator being a more lucrative one than that of the architect.

The completion of these Assize Courts was closely followed by the building of the large gaol in their rear, a structure of equal importance as regards cost. It was just at this time that the question of the erection of the Law Courts in London was rapidly coming to the front, and this, no doubt, weighed largely with Mr. Waterhouse when, early in 1865, he took the step of moving from Manchester to London. Although, for many years afterwards, he still kept on his Manchester office with a small surveying staff (in those days his quantities were prepared in his own office), nevertheless his headquarters for business and his residence were established at No. 20 (then No. 8) New Cavendish Street, and there it was that ever afterwards his work was carried on through all the busy times that followed.

The competition for the Law Courts occupied his chief thoughts during many long months of labour early and late. He had numerous legal friends well qualified to give him good advice on knotty questions of the special arrangements desirable for such a building, and his plans, well illustrated by a compendious volume of photographs from the drawings, with schedules of accommodation, &c., secured the practically unanimous vote of the working committee of barristers and solicitors appointed to report upon the relative merits of the designs submitted. But the eventual award lay with other assessors, and their voices prevailed on behalf of another competitor. Simultaneously with the inevitable discussions that followed their much questioned decision, the Government of the day announced its appointment of Mr. Waterhouse as architect for the Natural History Museum. This appointment was, at the time, generally accepted as an acknowledgment by the Government of a certain claim that he had upon them in another connection, though, as a matter of fact, the Museum had been, at least informally, entrusted to him before the result of the Law Courts competition was achieved.

The Natural History Museum is perhaps one of Mr. Waterhouse's most characteristic buildings, as it certainly is the most original. It embodies the extensive use of what, from the first, he was always so specially fond of—the round arch. His earliest predilections were in favour of an Italian Gothic—Lombardic and almost Byzantine in charactor—with freely treated detail, and in this somewhat flexible style he felt himself most at home. It has been asserted that the Natural History Museum is too redundant with ornament, but it is difficult altogether to agree with this contention. The material used (terra-cotta) almost demands a free use of enrichment, and in these non-heraldic days, which specially lack characteristic *motif* for suitable decoration, it would have been difficult in such a building to forego the specially appropriate ornamental detail suggested by the forms of animal and vegetable life which it was the very purpose of the building to record. These forms, moreover, are always vigorously treated and subordinated to the general lines of the structure.

In any case Mr. Waterhouse may well be forgiven the conventionalised barks of trees which enrich his columns, the monkeys which clamber round the big arches of the Central

THE LATE ALFRED WATERHOUSE, R.A., LL.D.

From a photograph of the Painting by W. Q. Orchardson, R.A., in the possession of the Institute.

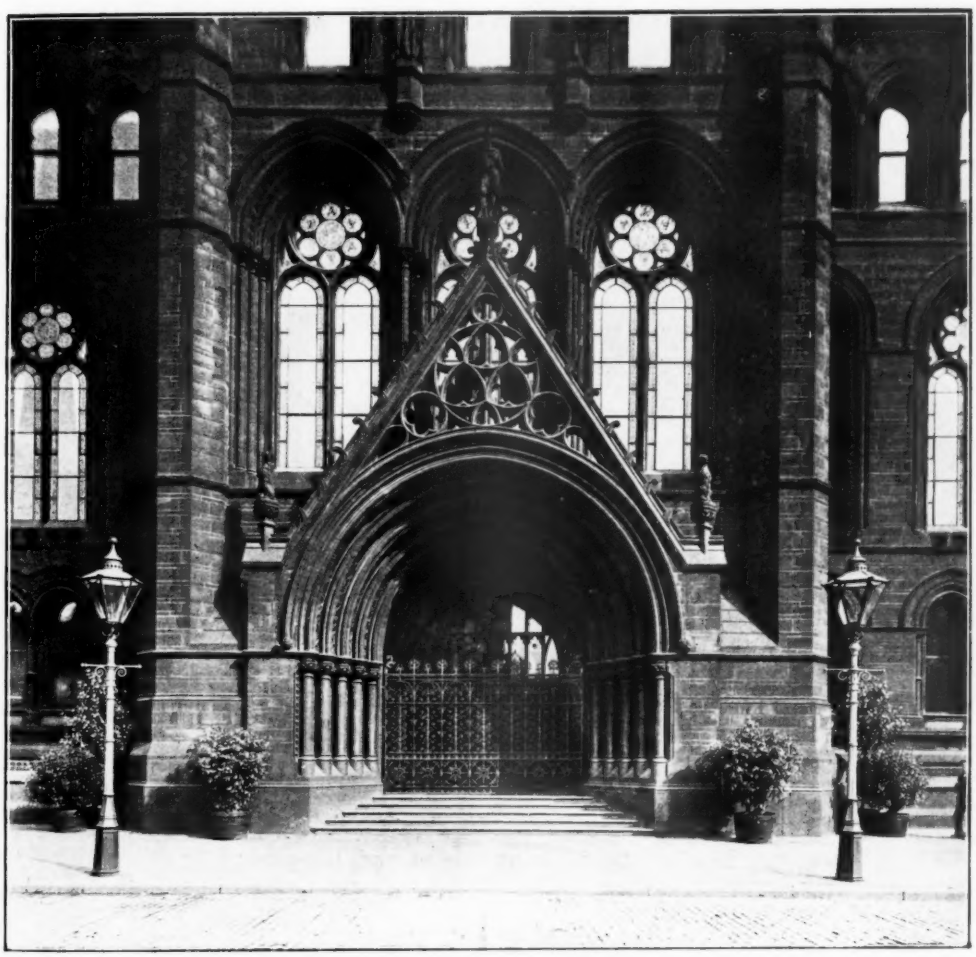
Hall, and the extinct birds and other animals which find their place on his façades, when one considers how all such matters of detail are overborne by the dignified unity of general conception, the simplicity and suitability of the plan, and the general adaptability of all its parts to their several purposes. The building suffers, however, from the parsimony of the Government of the day, that condemned it to be built in a hole considerably below the street level, from its present incomplete condition, and also, to some extent, from subsequent modification of the intentions of the original plans; but, taken as a whole, it must always be looked upon as a memorable achievement.

MANCHESTER ASSIZE COURTS.

Practically at the same time as the erection of the Museum Mr. Waterhouse had two other very extensive works going on in the provinces—Eaton Hall, near Chester, for the Duke of Westminster, and the Town Hall at Manchester. The Assize Courts had probably attracted the notice of the Duke (at that time Earl Grosvenor) when he gave Mr. Waterhouse a first commission—a signboard for the Grosvenor Hotel at Chester! This, however, had not long been hung when the Duke came, by the death of his father, into possession of the estates, and immediately decided upon alterations at Eaton Hall. It will always be a matter for regret that the eventual extent of these alterations was not foreseen by the Duke, stretching

as they did over about twelve years. His Grace's original intentions were comparatively limited, but he was gradually led on to modify every part of the Hall that he did not entirely renew. A complete rebuilding scheme, if faced at the outset, would have been more satisfactory, and probably no more costly.

The Manchester Town Hall is well known as an excellent example of Mr. Waterhouse's



MANCHESTER TOWN HALL: PRINCIPAL ENTRANCE.

consummate skill in planning and in the clever disposition of the general masses, the grouping, and skyline of a monumental building. It marks his principal achievement in the Gothic style that was destined so soon afterwards to grow into disuse for municipal purposes. The site was a peculiarly difficult one, and, as such, well adapted to display the special talents for which Mr. Waterhouse will be chiefly remembered. In completely triumphing over the perplexities of plan that necessarily accompanied any fulfilment of the conditions that had been formulated, he at the same time evolved, almost instinctively, the most charming features

of his design, such as, for instance, the beautiful circular staircases at the internal angles of the site. The mural paintings that decorate the Great Hall of this building brought him into intimate relationship with members of the Royal Academy, who recognised his merit by electing him as Associate in 1878 and afterwards as Academician in 1885. As regards his connection with the Academy, it may here be mentioned that for many years he acted as Treasurer to that body, and was a constant exhibitor—not merely in the architectural room, but also in the water-colour gallery. It is probable that comparatively few know what admirable skill he possessed as a colourist, and it is greatly to be desired that some day it may be possible to have a public exhibition of a selection from the hundreds of sketches that form the records of his various holidays amongst Swiss mountains, by the Italian lakes, and in old-world towns all over the Continent and the British Isles.

It is unnecessary in this short memoir to catalogue, other than very briefly, the large number of works carried out by Mr. Waterhouse during his half-century of architectural activity. *The Builder* of 26th August last contained a fairly complete list of his principal buildings all over the country, with their approximate dates.

At the same time a bare mention may be made of some of them—in groups—sufficient to show the very varied and extended ramifications of his professional work. His New University Club in St. James's Street, S.W., was perhaps his earliest London building of any importance, and exhibits the particular phase of Gothic, unfettered by traditional detail, that characterised so much of his subsequent work. His other chief London buildings not yet mentioned are—

The extensive offices of the Prudential Assurance Company in Holborn.
City and Guilds Technical Institute in the Exhibition Road.
The large quadrangle forming "New Court" in Carey Street and Portugal Street, W.C.
The Jenner (now Lister) Institute of Preventive Medicine on the Chelsea Embankment.
Surveyors' Institution, Great George Street.
National Liberal Club, Whitehall.
St. Paul's School, Hammersmith.
National Provincial Bank, Piccadilly.
University College Hospital.
Extensive alterations Grosvenor Hotel, Pimlico, and Grand Hotel, Charing Cross.
The Equity and Law Life Insurance Offices, Lincoln's Inn Fields.

Outside the metropolis his principal works may be conveniently classified as follows :—

UNIVERSITY AND COLLEGIATE BUILDINGS.

Cambridge University—Gonville and Caius College (new buildings).
,, Trinity Hall, New Court.
,, Jesus College.
,, Pembroke College, Master's Lodge.
,, ,, ,, Hall, Library, Lecture Rooms, &c.
,, The Union Buildings.
,, Girton College (of which the later portions were carried out in conjunction with Mr. Paul Waterhouse).
Oxford University— Balliol College (New Hall, south front, tower, &c.).
,, Union Debating Room.
Yorkshire College of Science at Leeds.
University College, Liverpool.
The Owens College, Manchester.

NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.

HOSPITALS AND KINDRED INSTITUTIONS.

The Turner Memorial Home, Liverpool.
Royal Infirmary, Liverpool.
St. Mary's Hospital, Manchester.
Royal Alexandra Hospital, Rhyl.
Salford Lying-in Hospital, Manchester.
New wing and other buildings, Nottingham General Hospital.

INSURANCE OFFICES AND BANKS.

Prudential Assurance Offices in Glasgow, Dundee, Edinburgh, Bristol, Huddersfield, Oldham, Bradford, Southampton, Plymouth, Portsmouth, Manchester, Liverpool, Leeds, Birmingham, Cardiff, Newcastle-on-Tyne, and Leicester.
The extensive head office of the Refuge Assurance Company at Manchester.
Royal Insurance Offices, Manchester and Leeds.
National Provincial Bank, Manchester.
Foster's Bank, Cambridge.
The "Old Bank," Bradford.
Williams, Brown, & Co.'s Bank, Leeds.

LARGE PRIVATE RESIDENCES.

Allerton Priory, Liverpool, for the late J. G. Morris, Esq.
Villa Allerton, Cannes, for the late J. G. Morris, Esq.
Heythrop Hall, Oxon., for Albert Brassey, Esq.
Iwerne Minster, Dorset, for the late Lord Wolverton.
Hutton Hall, Guisbro', for the late J. W. Pease, Esq., M.P.
House, Blackmoor, Hants, for Lord Selborne.
And many others.

MISCELLANEOUS.

Town Hall, Hove, Sussex.
Clergy Orphan Schools, Bushey, Herts.
Hotel Métropole, Brighton.
L. and N.W. Railway Hotel, Lime Street, Liverpool.
Seamen's Orphanage, Liverpool.
Municipal Buildings, Reading.
Public Hall, Alloa.

Of church work Mr. Waterhouse did comparatively little, his principal church being St. Elizabeth's, Reddish, near Manchester, built for Sir W. H. Houldsworth.

He erected several chapels for Nonconformists in Manchester, London, and elsewhere. Two of them in London are the Lyndhurst Road Congregational Chapel, Hampstead, and the Weighhouse Congregational Chapel, Duke Street, Grosvenor Square. Both of these are distinctly original in treatment, especially the plan of the former, where the body of the chapel is a perfect hexagon with deeply recessed galleried bays to the three sides opposite the pulpit —the porches coming between these bays.

The above list necessarily includes but a portion of Mr. Waterhouse's executed works, to which list might be added a goodly residue were it made in any way complete.

The present generation of architects will scarcely need reminding how much in request he was as assessor of large competitions in all parts of the kingdom, and how largely the earlier successes of so many of our leading men of the present day were owing to his powerful grasp of the relative merits and possibilities of the varied designs submitted for his judgment.

EATON HALL, CHESTER : CENTRAL BLOCK AND LIBRARY WING.

It has already been stated in this JOURNAL how much the Institute owed to his loyal adherence and energetic support during the years of his Presidency, and at all times during his long connection with it from his election as Fellow in 1861 to his retirement from active life in 1901. Though at no time was he specially desirous of taking upon himself public office, his whole energies were always unsparingly devoted to any cause with which he allied himself. Such a cause never failed to derive profit from his wise counsel and administrative abilities. He very specially identified himself with the foundation of the Society for Checking the Abuses of Public Advertising, of which he was for a long time president; and he was also a zealous treasurer of the Artists' General Benevolent Institution.

Honours, not a few, fell to his share. In addition to his English academic distinction as R.A., he was made an Associate by the several Academies of Vienna 1869, Brussels 1886, Antwerp 1887, Milan 1888; a member of the Royal Academy of Berlin 1889; a Correspondant de l'Académie des Beaux-Arts, Institut de France, and a Doctor of Laws of the Victoria University 1895. He was allotted the Queen's Gold Medal of the Royal Institute of British Architects in 1878, and obtained a Grand Prix for architecture from Paris in 1867, with a "Rappel" in 1878. He was a member of the organising committee for the Imperial Institute, of the Westminster Abbey Commission, and of the jury to decide upon the great international competition for the proposed new façade to the Cathedral of Milan.

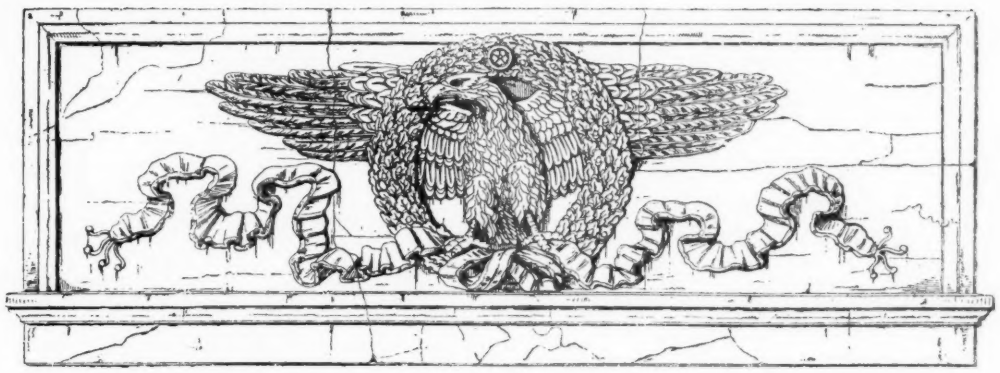
His great distinction was, however, the inexpressible charm of his personality. It has been remarked, in no spirit of exaggeration, that his very smile was worth a thousand a year to him, and none of those who ever came under its magnetic influence would be inclined to dispute the assertion. But the smile was merely the reflection from the sterling qualities of heart and mind that ever characterised him. His refined courtesy was felt by all with whom he was associated. With an unlimited capacity for hard work and all enthusiasm in doing it, he put a boyish energy and "abandon" into the recreations of his leisure moments.

Mr. Waterhouse married in 1860 Miss Elizabeth Hodgkin, daughter of John Hodgkin, barrister-at-law, and sister of Thomas Hodgkin, whose writings on Roman history are so widely known. His eldest son, Mr. Paul Waterhouse, M.A., joined him in partnership in 1891, and is, in consequence, partly responsible for some of the work executed since that date. He had four other children, three of whom survive, his eldest daughter being the wife of Mr. Robert Bridges, the poet.

The last twenty-three years of his life, when away from town, were passed amidst the delightful surroundings of his Berkshire home—Yattendon Court—on a hill crest overlooking a wide stretch of undulating woodland and down; and it is pleasing to think how the fleeting lights and shadows of the landscape before him must have gladdened his eyes long after his failing powers prevented his recording his impressions in the glowing colours he had handled so well. His pupil and, for many long years, assistant, who writes this brief record of his life, will always have a sad remembrance in the fact that he was prevented by illness from joining the sorrowing procession of mourners that on a wet afternoon in August slowly paced the winding path from the hill-top to a corner of the little churchyard at its foot, where were deposited the remains of the former master whom he loved and admired.

THOMAS COOPER.

Birmingham.



A DESCRIPTION OF THE TOWER AND SPIRE OF ST. NICHOLAS' CATHEDRAL, NEWCASTLE-ON-TYNE.

By W. H. Wood.

Read before the Northern Architectural Association, February 1905.

WE are all, I am sure, admirers of the beautiful steeple of St. Nicholas', which from so many points of view crowns the city of Newcastle. Many no doubt have sketched it, but as probably few have made measured drawings of it, those I am about to show will, I hope, be interesting. A measured drawing is often a surprise to those who have only made mental records or perspective sketches. I have read of an over-zealous restorer who, when remonstrated with for his suggested destruction of an old church tower in order to replace it with something more "mediæval," replied, "Yes, I admit that the tower looks all right, but if you will step into my office I will show you a measured drawing of it, and you will see what an absurd thing it really is!" I do not of course mean that you will find the steeple of St. Nicholas' absurd in elevational drawings, but you will probably find that the contours and general proportions appear different from your expectations.

It might not be out of place here to suggest that drawings of the "artistic draughtsman" type were not used by the old masters of our profession, either Mediæval or Renaissance, who were content with little more than diagrams and rough sketches; while models were much more used than now for judging of the ultimate effect of the work—a practice much employed by Sir Christopher Wren and the late William Burges.

One peculiarity about this steeple is the liability of the Corporation for its repair: this has been so ever since its erection; and when the last repairs were done in 1895, they were carried out at the expense of the Corporation of Newcastle by our firm. The same is the case at Antwerp, where the north-west tower of the Cathedral is entirely under the control of the Corporation of the city, and all expenses connected with the upkeep of the tower come out of the town revenue.

This gives the Corporation the control of the bells, and at St. Nicholas' the Corporation can have them rung at any time, so long as it does not interfere with Divine service.

Of course the primary reason for the existence of a church tower is to hold bells; and we must remember that bells played a very important part in the Middle Ages, being rung not

only for the calling of worshippers to the church and on occasions of public rejoicing and festivals, for the summoning of guilds, as the freemen of Newcastle are to this day, but also in case of alarm to call the citizens to defend the walls against assailants, to dispel tempests, to drive away evil spirits, to avert plague and pestilence, while the tolling of the passing bell besought the hearers to pray for some fellow Christian at that moment passing from this life into the intermediate state, and the solemn note of the "death bell" gave warning that all that was mortal of the departed was being carried to its last home.

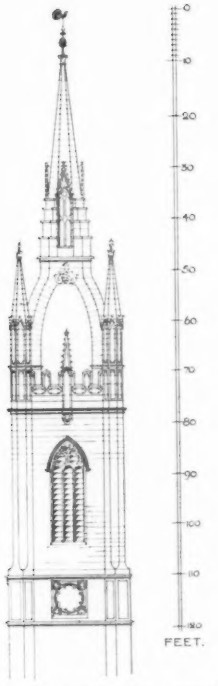
In Newcastle the town-watch used to muster in the lower part of the tower, which must have been screened off from the rest of the church. Here they received their orders for the night, and a picturesque sight they must have presented as they each emerged from the doorway of the tower, carrying bills and lighted lanterns, and proceeded to their several posts.

As for the adoption of this particular form of steeple, tradition says that it was erected in this manner so that a lighted lantern could be suspended in it to guide wayfarers across the moor at night. Sykes says that it was "illuminated antiently for the conduct of travellers." There is a record of payment made in 1566 by the Mayor of Newcastle and his brethren "for four pounds of wax made in candle for the lantern of St. Nicholas' Church, and for the working three shillings, and for two pounds of wax wrought in candle for the lantern of St. Nicholas' Church eighteen pence." We know that this was the custom in other places. According to Stowe, the steeple of old Bow Church, London, was "antiently illuminated for the conduct of travellers at night." Anyhow, for whatever purpose erected, there can be no doubt that the steeple of St. Nicholas' is a most striking object, and certainly is the feature of the building.

This steeple is of the type called the "Scottish Crown," and is, with the exception of St. Nicholas' and St. Dunstan-in-the-East at London, only found across the Border—the two well-known examples being St. Giles' at Edinburgh and King's College, Aberdeen. There was one at Linlithgow, but it is now destroyed. None of these, however, at all equals St. Nicholas' in grace of outline, both the Scottish examples appearing heavy and lumpy in comparison.

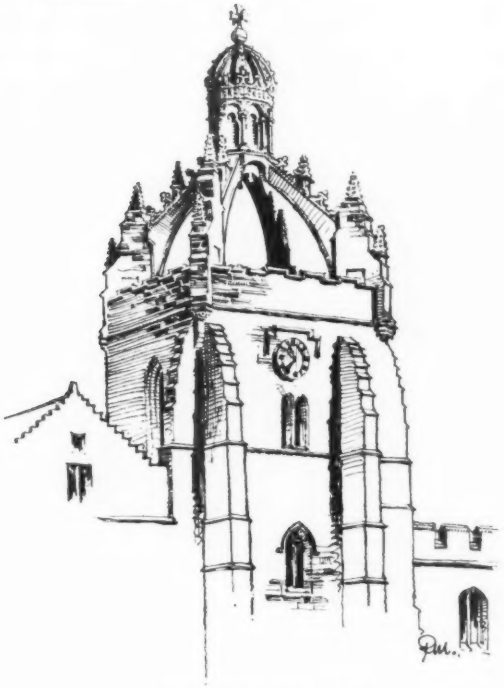
To take St. Giles' first. The tower itself is a plain rectangle without any buttresses, and with three single-light belfry windows on each face. The crown consists of eight arches springing from buttresses rising from the cornice of the tower, one at each angle and one in the centre of each face, one of these latter being enlarged to form a stair turret. These buttresses terminate in small ill-proportioned pinnacles. The back of each arch, ornamented with a cresting, is a straight raking line forming an abrupt angle with the buttress, and giving the idea of thrust. The lantern carried by these eight arches is merely a pinnacle surrounded by eight smaller pinnacles at its base. The parapet of the tower is very elegant, and consists of a row of pierced quatrefoiled circles surmounted by a cresting of the same design as used on the backs of the arches. The author of a book entitled *A Journey through Scotland*, published in 1732, speaking of St. Giles', Edinburgh, says: "Atop of this church is erected a large open cupola in the shape of an imperial crown. King David erected a copy after this over St. Nicholas' Church, Newcastle, but it does not near come up to it."

In the Aberdeen example the crown consists of four arches springing from the angles of the square boldly buttressed tower, and supported, as in the case of St. Giles', by stumpy buttresses rising from the cornice and terminating in small pinnacles. In this case, too, the backs of the arches are straight, ornamented with a cresting, and having a pinnacle placed half-way up the slope. The lantern is solid and larger than that of St. Giles', and finishes with an arched royal crown surmounted by an orb and cross. St. Dunstan-in-the-East, designed by Sir Christopher Wren, is a small structure, but elegant. The four arches spring from the corners of the tower: they are unmoulded and of high pitch, the extrados being



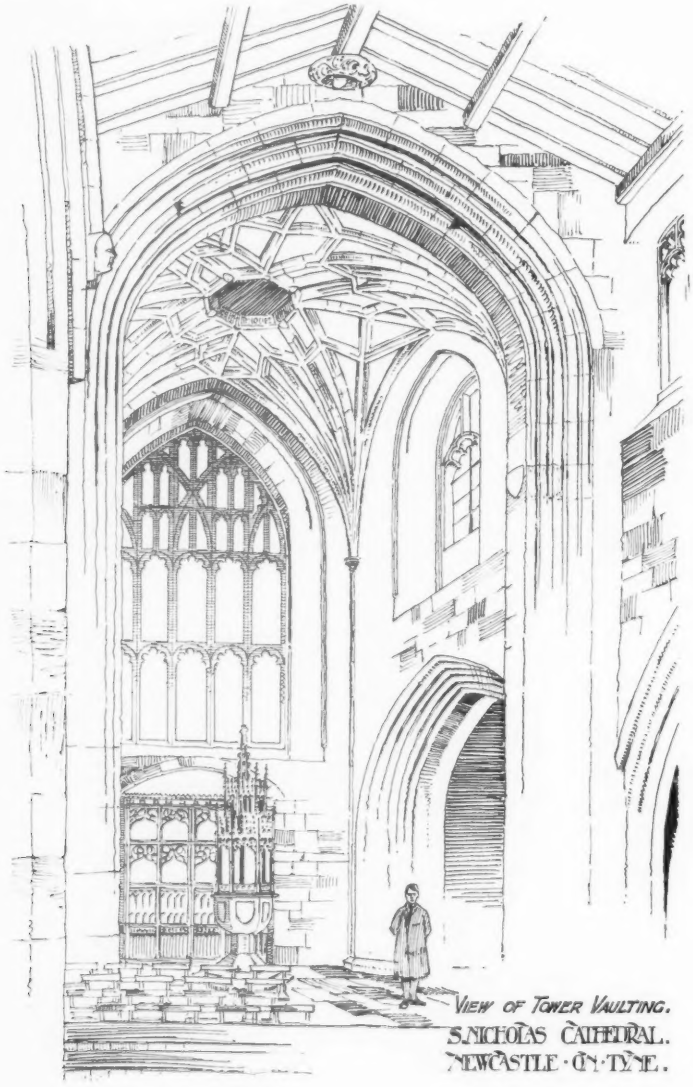
ST. DUNSTAN-IN-THE-EAST : STEEPLE.

ST. GILES'S CATHEDRAL, EDINBURGH.



KING'S COLLEGE, OLD ABERDEEN.

carried up by a reversed curve to the lantern, which is better proportioned than in the Scotch examples, and surmounted by a spire. Four pinnacles of good outline stand against the arches, into which they are bonded, thus giving a good mass of masonry where required to resist the thrust.

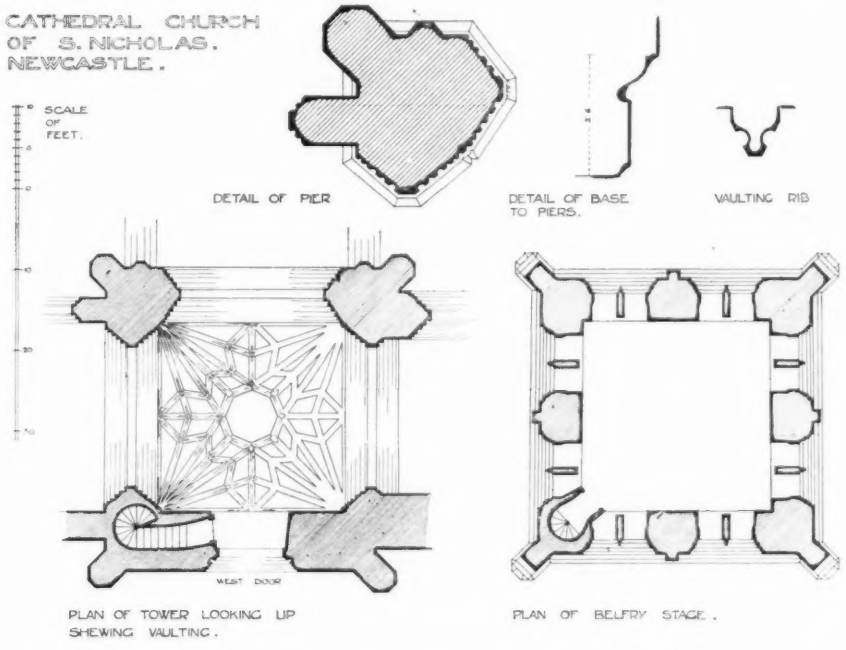


VIEW OF TOWER VAULTING.
S.NICHOLAS CATHEDRAL.
NEWCASTLE-ON-TYNE.

We will now proceed to examine St. Nicholas'. The tower stands at the west end of the nave, with which it communicates by a lofty four-centred arch moulded with a series of splayed orders, each having a deep hollow sunk in the splay. These orders are continuous on jamb and arch without the intervention of an impost. The side arches opening into the aisles

are similar but much lower, and with a three-light window over each. The mouldings of these and the arch to the nave stop on a boldly moulded plinth, which is unbroken except where the base of the vaulting shaft penetrates it. This omission of the cap is found in the fourteenth-century nave arcade, and in the nave arcade of St. John's Church, Newcastle; but in these cases the orders of the arch die on to the sides of the octagonal piers at the springing line, and are not carried down to the base.

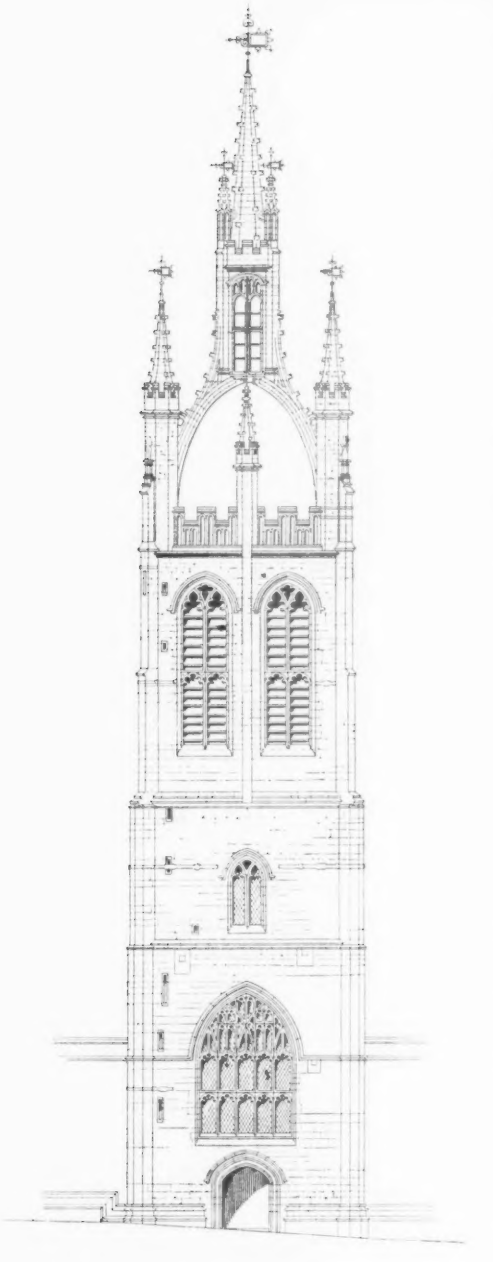
The west side of the tower is occupied by the doorway having a depressed four-centred arch, and with a five-light transomed window over it. In each angle is a small quarter octagonal shaft, from the cap of which spring the ribs of the vaulting. This is a lierne vault of beautiful design, all the ribs being of the same size and section, a splay with deep hollow, the same as to the arches below. Shields with the arms of the founder (three annulets, two and one, in chief a greyhound courant) are placed at the four points where the main ribs abut upon



the octagonal well hole, the other four points being occupied by carved bosses. Carved round the inner side of the well hole is the inscription, "Orate pro anima Roberti de Rodes." Robert Rhodes, who lived in Newcastle from 1427 till 1445, and died in 1474, was a great benefactor to the Newcastle churches; and tradition has always credited him with the erection of this tower, probably somewhere about the year 1470.

The plan of the tower is approximately square, but owing to some irregularity in the setting out the east side is narrower than the others, so that none of the corners are truly right angles. The spiral stair leading to the roof is in the north-west corner, and does not show externally. The entrance to it is in the north jamb of the west doorway.

The staging of the tower is good, although unusual in this part of the country, the belfry stage being tall in proportion to the rest. Well-marked horizontal members



West Elevation

coincide with the internal divisions, the first being a heavy string at the level of the ringing chamber floor, and the second, which is formed of three courses of offsets, at that of the belfry. Staging, or the marking of the horizontal divisions of towers, is an art in itself. Many simple but very dignified towers owe their success to skilful staging. Take St. Margaret's at Durham, for instance, a simple square tower without buttresses or ornamental features, but divided into stories by bold offsets in such a way as to produce a most satisfactory effect.

To return to St. Nicholas': the angle buttresses are semi-octagonal up to the bottom of the belfry stage, where they are weathered back, and somewhat abruptly change to square set diagonally, and in this form are carried half-way up the four large angle pinnacles, where they terminate in pedestals, each supporting a life-sized figure representing Eve at the north-east corner, Adam with the apple at the north-west, Aaron with mitre and book at the south-west, and David with the harp at the south-east. These statues are very rude as works of art, and are now considerably weather-worn.

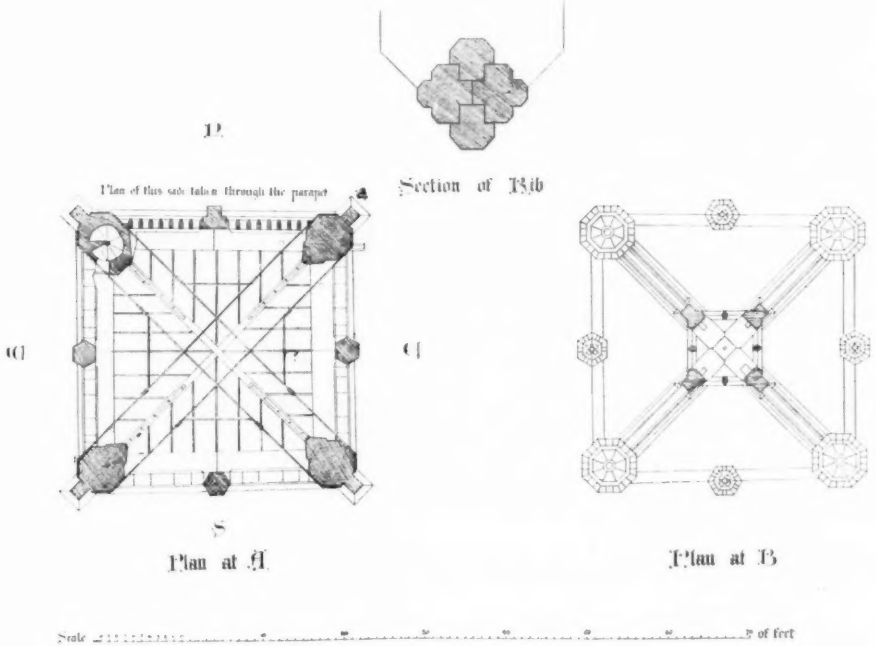
From the offset at the belfry stage there rise smaller square buttresses on the centre of each face of the tower. These are carried up through the cornice and merge into the face of hexagonal pinnacles, between which and those at the angle is a pierced battlemented parapet. This has been entirely renewed, and suggests in design the similar finish to the two stages of the central tower of Durham, which latter were entirely renewed about 1859, replacing those of about 1474.

The angle pinnacles are octagonal, 5 feet 9 inches in diameter, and 43 feet high above the cornice of the tower. They are beautifully designed, the height of the battlemented parapet being well-proportioned to the rest, and, as you will notice, the sloping sides of the upper portion curve out at the base with the most graceful effect.

There is a peculiarity in the arrangement of the crockets, which are placed on four angles only of these octagons, while in the smaller hexagonal pinnacles they are placed

on every angle, but at alternating levels; and this arrangement is adopted on the spire itself.

Internally corbelled squinches are formed in each corner of the tower, but do not carry anything, as the angle pinnacles scarcely overhang the line of the inner wall face, but they help to bind the angle of the tower. From the inner faces of these angle pinnacles spring the great arches carrying the lantern and spire. These are 31 feet span, and, as you will see from the section, are four-centred, but with the largest curve of 23 feet radius at the bottom, and the smaller curve of 14 feet 6 inches radius at the top, the intersection of the curves being exactly at two-thirds of the distance from the springing to the apex, where the arches meet on


Section of Rib
Plan of this side taken through the parapet
Plan at A
Plan at B
of feet
MEASURED AND DRAWN BY MESSRS. OLIVER LEESON & WOOD, NEWCASTLE-ON-TYNE.

a key block. Through this block there is a hole 4 inches by 3 inches, probably for dropping a plumb line through during the erection of the spire, and it may have been used for suspending a pulley for hanging the light from at night. It seems hardly likely that the light would be placed in the lantern itself, as it is difficult to see how this could have been accomplished except by a man going up a ladder to do it—anything but a pleasant task on a stormy night—and if it were placed there the stonework would hide the light from anyone approaching towards the angle.

The section of the arches is built up of four orders, the upper one, which is crocketed, being carried in an ogee curve half-way up the angle buttresses of the lantern, which is thus much stiffened, and the arches themselves rendered more rigid, while a wonderful grace of outline is given to the whole composition, this feature being one of the chief causes of the superior elegance of this over the other examples. The courses of these ogee curves are laid with beds none of which radiate to the centre, but are approximately horizontal

for the lower half, and truly so for the upper, where they are bonded in with the angles of the lantern.

There is a popular belief that there is an iron core bar in the arches, but this is a fallacy; they are stone throughout.

The structure of the lantern itself is singularly light, and consists of four angle buttresses set diagonally, between which are two-light transomed windows, the mullions being carried on arched sills spanning from arch to arch. The lights of these windows are now filled in with strong bronze frames, inserted when the steeple was repaired in 1895 in place of the iron saddle bars, which had rusted and split the stonework.

At the springing of these window heads, from which point the spire commences (see section), are two oak beams 12 inches by 6 inches, placed crosswise and fastened to each angle of the structure by iron straps. The angle buttresses terminate in pinnacles with panelled sides, from which spring small flying buttresses to the sides of the spire, which has the same graceful spreading curve at the base as have the angle pinnacles.

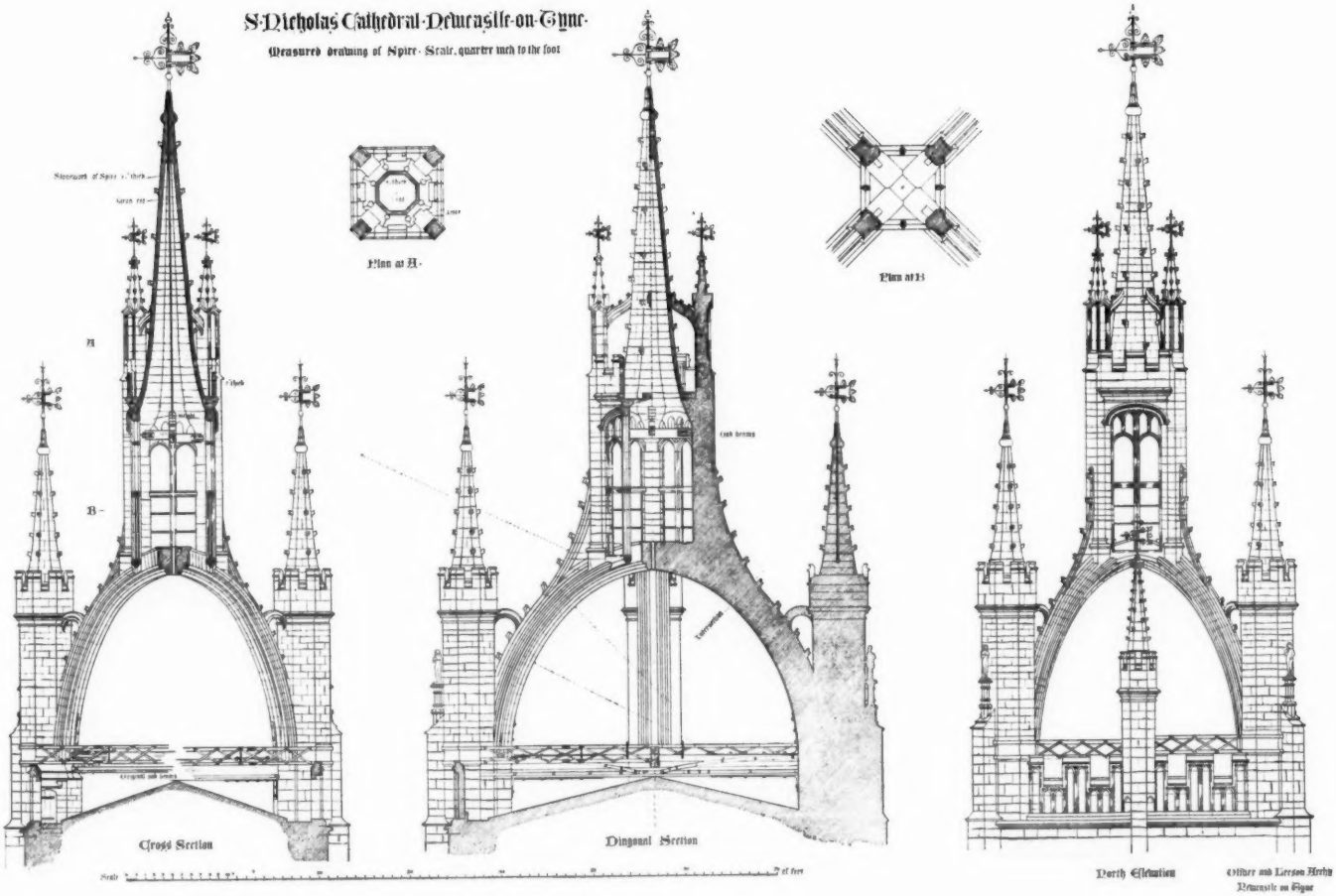
These concave lines are characteristic of the fifteenth century—you find them at Sedgefield on the pinnacles of the tower—and mark the greater appreciation of line which distinguishes work of this date from that of earlier periods. The masonry of the spire is laid with horizontal beds, and is four and a half inches thick, with the exception of the upper seven feet, which is solid. The rod of the vane is brought through this solid portion, and attached to it is a rod with a weight at its lower end which hangs a few inches above the cross-beams and is supposed to act as a counterbalance to the spire during storms. This method has been adopted in other instances, but I am not sure that it is so good as securing the rod to the cross-beams would have been, or forking it and building the ends into the masonry, as Wren did at St. Mary-le-Bow. The parapet of the lantern is five inches thick, with diminutive buttresses three inches square behind the centre merlons, and it stands on the cornice, the stones of which are carried through and form a walk round the spire. The water from this is carried off through small weep-holes at each angle of the spire, and drops down inside, this arrangement of the holes preventing the water falling on the beams.

As will be seen from the drawing, the large arches carrying the lantern are tied in at the springing by an arrangement of ties of flat bar-iron passing right round the angle pinnacles and crossing over the centre of the tower. They are fitted with union joints and are braced together vertically by diagonal straps, presenting, as seen from below, the appearance of lattice girders. These were added in 1868 by Sir G. Gilbert Scott, and were wrapped with spun yarn and tarred as a protection from the weather. This had proved an unfortunate experiment, as the tar having perished, the yarn retained the moisture, thus causing greater oxidisation than if they had been unprotected. This covering was all removed during the last repairs and the iron cleaned and painted.

There still remain within this modern ironwork the oak beams which fulfilled the same duty previously. These beams are arranged in pairs crossing diagonally from corner to corner of the tower, where they abut against the masonry of the pinnacles, and resting on each other in the centre where they cross, the lower one being supported by the apex of the roof. The spaces between the upper and lower beams of each pair are filled in with other pieces and the whole bolted together. The beams, which are considerably decayed in places, have been repaired at some time, new pieces being inserted attached to the old by scarfed joints. These newer pieces are at the ends, and are now decaying where they touch the stonework owing to the latter becoming saturated by rain and retaining the damp. At the N.E. and N.W. corners small portions of the original iron straps remain though now corroded to extreme thinness. These had passed round the pinnacles and been secured to the oak beams by round-headed

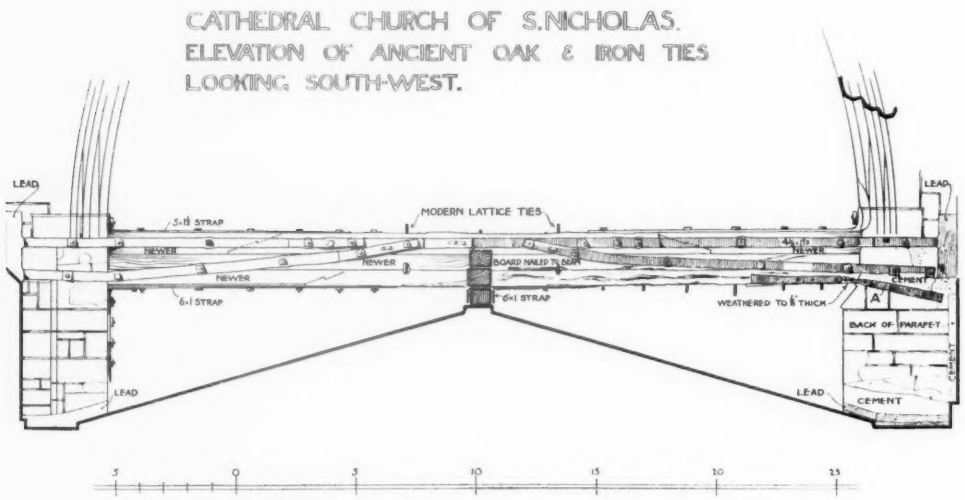
S. Nicholas Cathedral Newcastle-on-Tyne.

Measured drawing of Spire. Scale, quarter inch to the foot



Oliver and Leeson Archts
Newcastle on Tyne
Oct 1895.

bolts. One of these is shown at A on the drawing. The straps show by their laminated structure that they had been forged. At some later time, probably when the beams were repaired, new iron straps were added. These are bolted to the oak by screw bolts with square nuts of irregular sizes. Other straps were added above and below the beams, bolted right through and turned up against the soffits of the arches and down against the pinnacle, forged with a strong foot in the bend and attached to the stonework by bolts in a much less satisfactory manner for giving a direct tie than the original straps. Although the oak beams are considerably decayed and the ironwork corroded they would still be equal to their duties had the tightening up of the lattice ties by their unions not relieved them of all strain. I am inclined to believe that in the older of these beams and the traces of the iron straps remaining



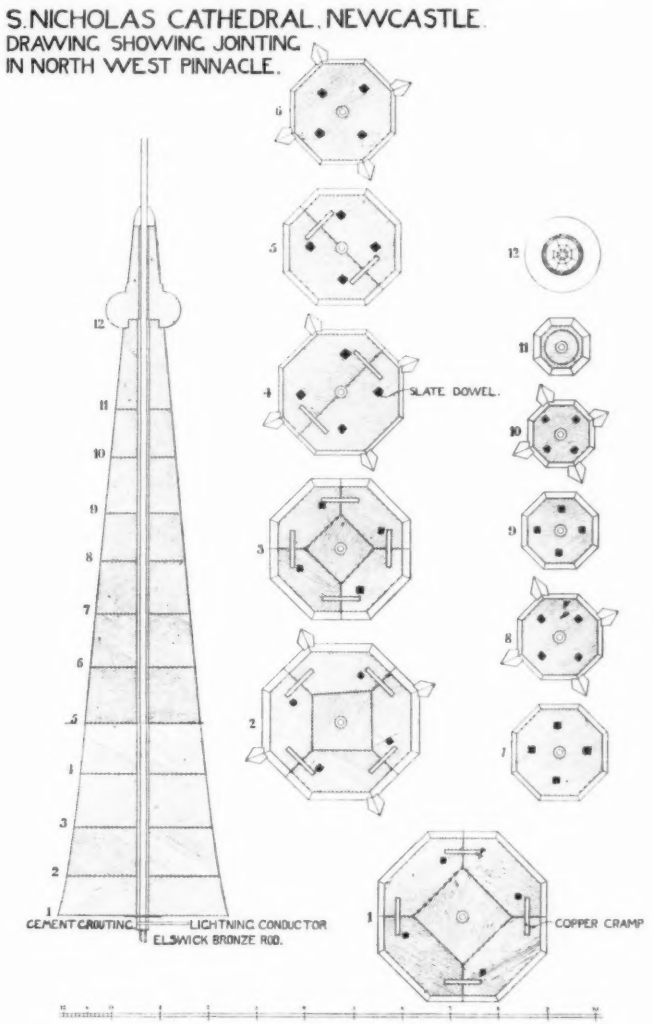
on the two north pinnacles we have the original ties inserted when the tower was built. When Mackenzie wrote in 1827 he mentions these beams as being encased in lead, which would account for their preservation. This was exactly what a mediæval architect would do. The encasing of wooden structures in lead is well exemplified by the lantern of Ely Cathedral. I do not know when the lead was removed, but there is no trace of it left now.

Although the structure may theoretically be capable of standing without ties it would not do so in actual practice, exposed as it is to the fierce gales so frequent in this N.E. corner of the country, to the occasional shocks of earthquake—which happily are of infrequent occurrence—and to the vibratory action of the bells. Experiments made with a heavy plummet suspended from the cross-beams of the lantern to just above the tie-beams below registered a swing of 15 inches in each direction during the ringing of the bells. This of course does not mean that the structure sways 30 inches, but certainly indicates a considerable movement, as indeed may be observed by the eye by getting the spire in line with a fixed vertical object while a peal is being rung.

The weight of a corner pinnacle taken from the top of the cornice of the tower and including as many of the tower voussoirs of the arch as would stand unsupported (a point shown by the lower radius line on the section) is 73 tons. The weight of one arch above this

point, together with one-fourth of the lantern and spire, being the weight supported by each pinnacle, is 30 tons.

About the year 1832 the church authorities became alarmed at the condition of the tower, which was leaning over 12 inches to the south and nine inches to the west, and John Green the architect did some undersetting, and built the two large buttresses with raking joints on the south side; he also added the porch on this side, and two years later built that on the north. Previous to this the tower had no footings, but the wall rested on the clay at a depth of from four feet to five feet six inches. It was not an uncommon practice in the Middle Ages to build direct on the surface of the ground: the tower of St. Margaret's Church at Durham and Chester Cathedral are examples. A good deal of tying-up was done at this time by John Dobson, the architect acting for the Corporation, iron bands being inserted at the level of the clerestory window sills, that on the south side being continued right along the nave; other bands were inserted at the ringing chamber level.

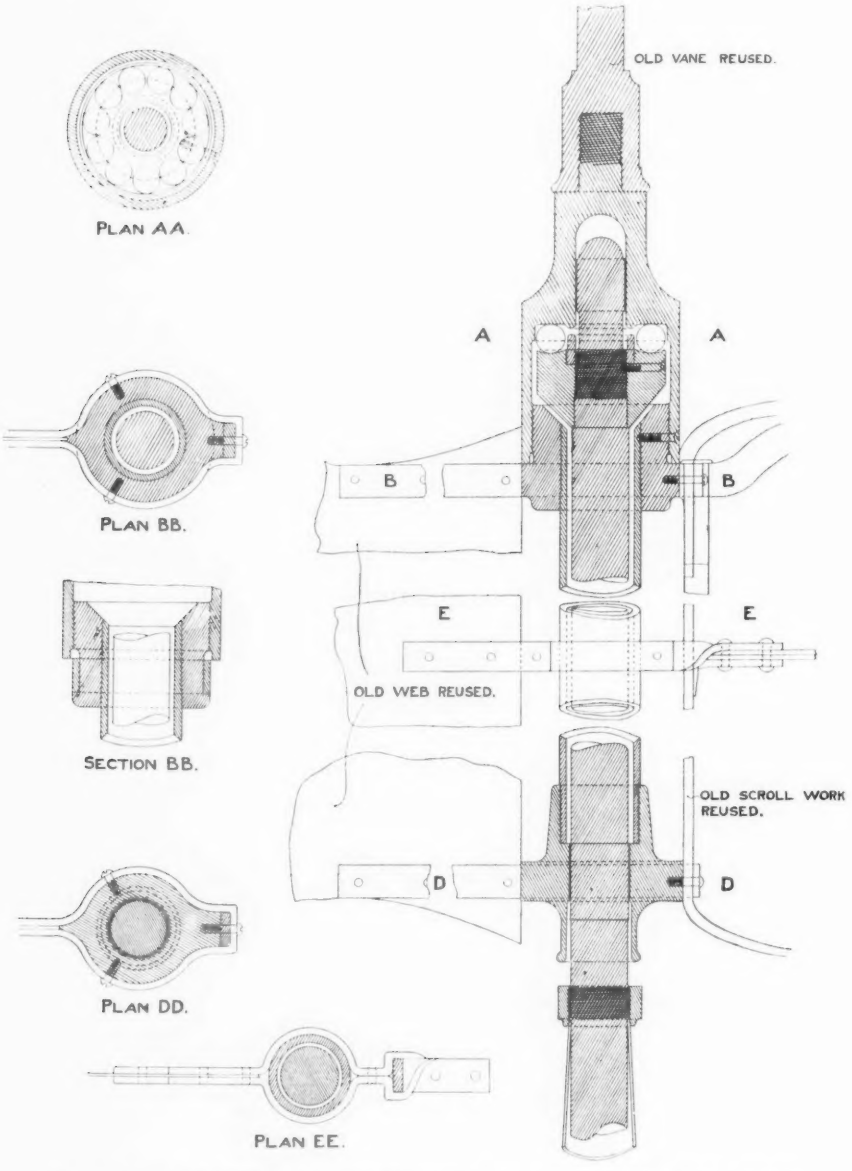


The works done in 1832 did not have as much effect as was anticipated, and in 1868 Sir G. Gilbert Scott reunderset the tower to a depth of 14 feet below the nave floor level, putting in a proper concrete foundation. This was an operation of great difficulty, the tower having to be shored up on the south and west sides from the ground to the parapet.

When in 1895 Mr. Leeson was employed by the Corporation to make certain "reparations," to use an ancient term, he found it necessary to take down the upper part of the angle pinnacles as far as their parapets. This was a somewhat delicate operation, as there was a danger of the haunches of the arches rising when the supporting weight of the pinnacles was reduced.

To obviate this it was suggested to put centering under the arches, wedged up so as to

relieve the haunches of all strain; but in this there was an element of danger, as had the centering got wet it would have swollen and dislocated the whole structure. The plan adopted was to replace the weight of each stone as it was removed by an equal weight of pig lead suspended by chains from the parapet of the pinnacle, and removed in like manner as each stone was replaced.



CATHEDRAL CHURCH OF ST. NICHOLAS, NEWCASTLE-ON-TYNE: DETAIL OF VANES ON LARGE ANGLE PINNACLES.

You will see from the section that the courses of these pinnacles are fastened together with square slate dowels, while the separate stones of each course are bound together by copper cramps.

In addition to this the bronze rods of the vanes one and a half inch in diameter are continued down to the twelfth course from the top, where they are secured by a plate and nut to which is attached the lightning conductor. All the vanes, of which there are thirteen, have been remade, only the web and scroll-work being retained; in the case of the five large vanes they have been made to work on ball bearings.

In connection with this work Mr. Hamilton Rendel, of the Elswick firm, took a great interest in the subject and made several experiments to determine the best mixture for the supporting rods and ball bearings. For the rods phosphor bronze was tried and subjected to a test equal to 80 lb. wind pressure upon a fixed vane assumed to have got stuck fast. This was not successful, the phosphor bronze at once taking a permanent set. The metal eventually used was the mixture known as "Elswick" bronze, which was subjected to the same test and immediately returned to its original line when the pressure was removed.

Mr. Leeson, having decided to adopt the principle of ball bearings for the vanes, at first thought of agate for the balls, but was doubtful about the effect of frost on them at that height, so gun-metal was tried; but after a few weeks the vane began to work stiff and would only move with a strong wind. Upon examination it was found that although enclosed in an air-locked chamber a black greasy deposit had formed on the balls.

On the advice of Mr. Rendel these were removed, and others made of hardened copper substituted, which have proved thoroughly satisfactory.

The old vanes had been made to work with a glass socket resting on a steel point, and in every case the latter had drilled through the glass, the broken fragments of which were jammed between the rods and the enclosing tubes, entirely preventing any movement. This shows that glass is a most unsuitable material for the purpose, and should always be avoided.

In the smaller vanes the supporting rod has a blunt end, and between it and the metal socket is interposed an agate skate of lenze section, an arrangement not so sensitive as the balls, but which acts fairly well and cannot get out of order.

It is interesting on a windy day if the wind is blowing on to a corner of the tower to see the vane on the lee side being whirled round and round by the eddying currents; the stonework breaking the force of the wind causes a partial vacuum on the opposite side into which the air is drawn in a manner resembling the whirlpool in a stream.

At some time numerous steel wedges were driven into the joints of the great arches carrying the lantern with the idea of tightening them up. These had oxidised, swelling to twice their original size and severely splintering the stone. All these had to be removed and the stonework repaired. In one case two of the voussoirs on the upper side of the arch had been kicked up several inches by this action of the wedges. Sir Gilbert Scott had very carefully examined them, but left them alone.

Of course matters had not improved in the twenty-seven years which had elapsed when we (Oliver, Leeson, and Wood) took it in hand, and it was imperative that something should be done. Small pieces of the displaced stones were cut away to allow strong shores to be inserted to support the voussoir immediately above; the old stones were then rapidly removed and new ones which had been prepared were at once inserted and grouted up with cement. During these works it was found that the old mortar had been completely reduced to dust by attrition due to vibration, and when a rod was inserted into the joints the remains of the mortar ran out like the sand of an hour-glass. The joints were thoroughly washed out, lead wedges being inserted and then grouted in with liquid cement.

I have already referred to the fact that the tower is out of the vertical. The cause of this failure has been attributed partly to intermural burials close up to the bases of the piers, partly to accumulation of water in the foundations or to movements of the subsoil. The bed of sand and water which extends all over Newcastle at depths below the surface varying from two to twenty feet is responsible for the fact of so many of the buildings of the city which have been erected any considerable time being out of the vertical, and in all cases the inclination is towards the river. This is most noticeable in those buildings nearest the river, those in the Close for instance. It is quite perceptible in Dean Street, while as far away as Grainger Street a careful test shows that on the east side the buildings lean back from the roadway, and on the west side they lean forward towards it, showing that the water is constantly carrying away the sand through which it is finding its way to the river—an action much facilitated by the dredging of the bed of the Tyne.

None of these causes will explain the inclination of the Cathedral tower, as although on carefully plumbing it the tower is found to lean 13 inches over to the south, yet the spire is vertical, proving that the movement of the tower must have taken place before the spire was added. This, I think, points to some local defect in the subsoil, causing the south-east pier and south-west angle to sink, which they have done to the extent of four or five inches. Whatever the reason of the settlement was, they must have got on to the boulder clay, as after this movement was once over nothing further has taken place during the last 400 years, as shown by the verticality of the spire. This bed of sand and water is most capricious, being found sometimes almost immediately below the surface and sometimes dipping almost vertically to depths of 30 to 40 feet, as we found during the excavations for the foundations of Milburn House immediately to the south of the Cathedral churchyard.

The dimensions of the tower are as follows: Diameter 36 feet, height from the ground at centre of west side to the cornice 113 feet, from the ground to the top of the angle vanes 162 feet, and to the top of the centre vane 204 feet.

The stone used in the steeple appears to be from Black Pasture, near Chollerford, a stone used by the Romans, and which when carefully selected weathers well: a necessary quality in a structure of such attenuated substance, with the wind blowing through and eddying round it—a condition very conducive to decay of the surface. In some spires it has been found necessary to glaze the openings to arrest this action.

The name of the architect who designed this masterpiece is not known, but he was undoubtedly a man of great ability and artistic perceptions, as testified by the admirable balance of the design, the carefully studied outline, satisfactory from every point of view, and suggesting most conclusively, to my mind, that the steeple was executed from a carefully prepared model, as it is difficult to imagine that the beautiful outline and proportion could have been obtained in any other way.

And here I may remark that although there are captious critics who condemn this steeple as a species of stone acrobatics on account of its dependence on ties, they are fortunately very much in the minority. They should remember that many of the most admired buildings of Italy, notably some of the projecting porches, would not stand were it not for the tie-rods inserted at their erection. Our own Westminster Abbey has tie-rods at the springing of the pier arches from end to end. As for critics like Dibdin, who considered it ill-proportioned and ugly, we can only conclude that their artistic perceptions have not been developed.

The design is obviously the result of careful study and experiment, in which the clumsiness of the earlier examples has been avoided and a work of art produced which has a picturesque grandeur that is unique, and is justly the admiration and pride of the citizens of

Newcastle of the present day as it has been of those of the past. We should be grateful to that worthy Mayor who was the means of saving it from destruction at the hands of the Scots. During the siege of Newcastle in 1644 the general of the besieging army threatened to destroy the steeple unless the keys of the town were given up. Sir John Marley, the Mayor for the time, with ready presence of mind, had the chief Scottish prisoners confined on the top of the tower and returned the general the answer, "that they would upon no terms deliver up the town, but would to the last moment defend it; that the steeple of St. Nicholas was indeed a beautiful and magnificent piece of architecture and one of the great ornaments of their town, but yet it should be blown into atoms before ransomed at such a rate; that, however, if it was to fall it should not fall alone; that the moment he destroyed the beautiful structure he should bathe his hands in the blood of his countrymen, who were placed there on purpose either to preserve it from ruin or die along with it." This was fortunately the means of saving the building from destruction, and during the rest of the siege not a single shot was fired against it.

ST. NICHOLAS' CATHEDRAL.

9, Conduit Street, London, W., 30*th Sept.* 1905.

CHRONICLE.

The late Alfred Waterhouse.

The following letters, received by the President from Hon. Corresponding Members of the Institute abroad, have been handed in for publication:—

Institut de France, Académie des Beaux-Arts,
Paris le 9 septembre 1905.

Monsieur Belcher, Président de l'Institut des Architectes Britanniques.

Monsieur,—Dans sa séance de ce jour, l'Académie des Beaux-Arts de France, dont M. Waterhouse faisait partie à titre de Membre Correspondant, m'a chargé de vous exprimer ses regrets et ses condoléances pour la perte de l'éminent collègue et de l'artiste distingué que vous avez faite en la personne de M. Waterhouse, dont la mort nous a été connue par la Presse.

Je saisis cette occasion pour vous présenter avec les hommages de l'Académie des Beaux-Arts mes meilleurs souvenirs personnels.

Pour le secrétaire perpétuel,
F. L. Pascal.

Baden Baden, 26th Aug. 1905.

To the President and Council of the Royal Institute of British Architects, London.

Dear Mr. President,—May I be permitted to express to you, to the Council, and to my brother-architects of the R.I.B.A. my deep and respectful sympathy on occasion of the death of Mr. Alfred Waterhouse, our regretted Past President and my distinguished *confrère* at the Institut de France?

Ever since I met Mr. Waterhouse at Paris, and saw in London some of his beautiful buildings, I have felt for him true personal sympathy and warm admiration. I used to look up to him as to one of the brightest stars of modern architecture.

In the present day, when so many people, under the pretext of freedom, are turning Art into madness, the departure of this noble artist is peculiarly sorrowful to all lovers of new as well as ancient beauty. In freely opening to architecture new paths of beauty, Mr. Waterhouse always kept in mind those fundamental laws without which lasting beauty cannot be attained.

In doing so, Mr. Alfred Waterhouse proved in the kingdom of Art, too, the necessity of harmoniously uniting two English glories *par excellence*—love of freedom and respect for law.

Believe me, dear Mr. President and Gentlemen, to be your respectfully and very sincerely attached Hon. Corr. Member,

H. von Geymüller.

The funeral of Mr. Alfred Waterhouse took place at Yattendon on Monday, the 28th ult. The coffin was borne from the house on a hand bier by villagers employed on the estate, and was followed on foot by a numerous body of relatives and friends assembled at Yattendon Court from all parts of the country. The service was held in the little village church, which was restored by Mr. Waterhouse at his own cost in 1881, and the interment took place in the churchyard. The Institute was officially represented at the ceremony by the Hon. Secretary, Mr. Alex. Graham, F.S.A.; others of the Institute present including Mr. T. M. Rickman [*A.*], Mr. Thomas Cutler [*F.*], Professor R. Elsey Smith [*F.*], Mr. R. S. Balfour [*A.*], and members of the staff.

Joint Committee on Water Regulations.

The Joint Committee on Water Regulations, consisting of representatives of the majority of the water undertakings of the kingdom, the Royal Institute of British Architects, the British Association of Waterworks' Engineers, and the Plumbers' Company, met on the 15th inst. at the Guildhall to consider the report of its sub-Committee A and the adoption of its draft code of by-laws and regulations and submission thereof to the Local Government Board. Mr. H. D. Searles-Wood [*F.*] was present on behalf of the Institute. The Report stated that much of the information with which the Committee had been furnished related to the varying rate of consumption of water in different towns, the quantity of waste—estimated at upwards of a third of the whole supply—expenses incurred in the detection of waste, and reduction of waste due to the proper adoption of fittings and the efficient carrying out of plumber's work. It was stated that the regulations drawn under the various enactments when seen together presented almost endless variety and absence of plan. The discordance of the regulations indicated the nature and extent of the difficulties with which the general body of authorities had to contend, and their need for extended powers to make by-laws for defined purposes with corresponding regulations sufficiently specified, or, alternatively, for such amendment of the powers of the Local Government Board as would provide for the recognition of such common standards of practice as would represent an irre-

ducible minimum of efficiency and convenience. The existing regulations, so far as local conditions of supply and of use might allow, should be standardised for common use. In order to obtain the views and assistance of the manufacturers of water-fittings, the sub-Committee had called a meeting of the manufacturers of the kingdom, at which general appreciation was expressed of the advantages of standardisation from the manufacturers' point of view. Such standardisation would be also to the obvious convenience of consumers. The sub-Committee had sought to codify the chief administrative provisions relating to the distribution of water for domestic and other purposes, and to establish a standard of practice below which no work should be permitted in the interests both of the water authorities and the public. The report was adopted on the motion of Mr. Alderman Gainsford (Sheffield Corporation Waterworks), seconded by Mr. H. D. Searles-Wood, who observed that architects welcomed the opportunity of taking a part in the framing of regulations more equitable to the consumer and more efficient from the point of view of the water authorities. The draft code was approved with some amendment, and is to be submitted to the Local Government Board, with a request that the Board would consider it with a view to action thereon. A Committee has been appointed to deal with the further standardisation of fittings and materials.

School of Art Wood-carving.

The School of Art Wood-carving, which has been established with a view to encourage the art of wood-carving in this country as a branch of the fine arts, now occupies rooms on the top floor of the new building of the Royal School of Art Needlework in Exhibition Road. The School has been reopened after the usual summer vacation, and it is intimated that some of the free studentships maintained by means of funds granted to the School by the London County Council are vacant. The studentships are awarded by the London County Council and by the Committee of the School to persons of the industrial class who intend to earn their living by wood-carving. Candidates must have passed at least one of the examinations of the Board of Education in free-hand drawing. Preference is given to those who have some knowledge of wood-carving or have passed in other subjects of art. The day classes of the School are held from 10 to 1 and 2 to 5 on five days a week, and 10 to 1 on Saturdays. The evening class meets on three evenings a week and Saturday afternoons. Forms of application for the free studentships and all information may be obtained from the manager. Students connected with the wood-carving trade and professional teachers are admitted at half fees.

Mr. Percy S. Worthington's Paper "Past Tradition and Modern Design."

Erratum.—The description of the Parthenon columns as being "556 diameters high" in Mr. Worthington's Paper in the last number of the JOURNAL [page 595, line 11] is an error for which the printer, and not the author, is responsible. The decimal point, it will be at once seen, has been omitted after the first "5," and the figures should read "5·56."

OBITUARY.

The late Charles Lucas [*Hon. Corr. Mem.*].

It is with the deepest regret that we have to announce the death of Charles Louis Achille Lucas [*Hon. Corr. Mem.*], which took place on the 19th inst. He died at No. 23, Rue de Dunkerque, his Paris residence—familiar to many who have visited him—at the age of sixty-seven. In M. Lucas the Institute has lost its fastest and most loyal friend abroad. He was a member in a very real sense, not only taking an interest in its public functions, but keeping in close touch with its domestic politics and professional aims. For nearly twenty-five years the name of Charles Lucas was a household word among those connected with the profession in this country whom business or study called to France, and in the Secretary's office he was regarded less as an Hon. Corr. Member than as an unofficial Hon. Secretary of the Institute. Only the permanent officials of the Institute can really appreciate the enormous amount of labour, spread over a number of years, which he cheerfully undertook and thoroughly accomplished. For him the word trouble did not exist. The Institute desired such and such information. He supplied it if it cost him a week's work. All will remember the exhaustive Paper he read on the Exhibition Buildings of 1900, but few realise the myriad difficulties he had to overcome in order to present the Institute with a practically complete set of jealously guarded working drawings. For those who went to Paris to seek his help or advice his kindness was inexhaustible. A stranger bearing a line of introduction from the Institute found it an Open Sesame to his heart. Did a member desire to visit buildings of a certain type in France? There was M. Lucas to set him on his way. Did a student want to make measured drawings of closed monuments? It was M. Lucas who unlocked the doors for him. To spend an hour in his company was worth a visit to Paris. His enthusiasm, his indefatigable energy, his *fougue*, showed you the paltriness of difficulties. The tired man of half his years came away young again, invigorated by his magnetic personality. No man more exulted in action. His impetuosity in doing you a kindness swept from your mind the sense of obligation.

There are those who mourn the loss of a personal friend, to whom Paris, unillumined by his radiant vitality, will be a darker place. But here these things cannot be dwelt upon; here we deplore the irreparable loss to the Institute of one who, jealous of its prestige and for ever wakeful to its interests, has done it valiant and invaluable service. Dear colleague in very truth, *ave atque vale!*

THOMAS EDWARD KNIGHTLEY [*F.*], of the firm of Messrs. Knightley and Batterbury, whose death occurred on the 4th inst., in his eighty-second year, had been a member of the Institute for nearly fifty years, having been admitted *Associate* in 1856 and *Fellow* in 1860. Mr. Knightley served his articles with Mr. Waller, of Ironmonger Lane, commenced practice in Gough Square, Fleet Street, and removed to Cannon Street fifty-two years ago. For forty-eight years he was District Surveyor for Hammersmith, only resigning the office last year, and for fifty-four years architect to the Edmonton Union Board of Guardians. Among his best-known architectural works are the Cavendish Hotel, Eastbourne, the Queen's Hall, Langham Place, additions to the Church of All Saints, Haggerston, the Church of St. Matthew, Bethnal Green, the new offices of the Edmonton Union, the Commercial Travellers' School at Pinner, the Bakers' Almshouses, Leyton, the offices of the Public Health Department at the Guildhall, the new Birkbeck Bank, and several blocks of warehouses in Milton Street and Aldersgate Street. He was awarded premiums for his designs in the competitions for the City of London School and the Metropolitan Meat and Vegetable Markets, Smithfield. He was honorary surveyor to the committee for the additions to Brockwell Park, Herne Hill, and Brixton, and held the appointment of Surveyor to the Birkbeck Building Society since its foundation in 1851 till last year, when his partner was appointed joint surveyor. A large folio volume on "Stable Architecture" was produced by him in 1862. In July 1901 he took into partnership his former pupil, Mr. Thomas Batterbury [*F.*], District Surveyor for Plumstead and Eltham.

JAMES WEIR [*F.*], who died on the 27th ult., aged sixty years, was elected *Associate* in 1871 and *Fellow* in 1882. He was the architect of Hinde Street Chapel, Marylebone; the new Surrey Chapel and schools in Blackfriars Road; the Wesleyan Church, Hayward's Heath, and the chapel at Burgess Hill, Sussex; the alterations and enlargement of the premises of the Davis Gas Stove Company, 202–6, Camberwell Road; the Wesleyan Church in Norman Road, St. Leonards-on-Sea. He also prepared the plans and designs of the Wesley Hall, adjoining the Wesleyan Chapel at Leatherhead, and the Wesleyan Church at Sevenoaks.

CHARLES GRAYSON MAYLARD, of 34, King Street, Cheapside, *Associate*, elected 1874, died on the 26th ult., in his seventieth year. He was architect of St. Mark's Church, Wimbledon, completed in 1888, and of various houses with shops in Queen's Road, Bayswater.

JAMES K. COLLING, a former member of the Institute, to whom architects are indebted for such interesting and valuable records of the Gothic Revival in his *Gothic Architecture*, *Gothic Ornament*, and *Mediæval Foliage*, passed away on the 1st inst., in his ninetieth year. Mr. Colling was elected *Associate* in 1856 and *Fellow* in 1860, but resigned in 1885. He helped to found and was the first Hon. Secretary of the Architectural Association. Born in 1816, he went to school in Devonshire, and his natural talent for drawing being encouraged, he early acquired considerable skill in drawing from Nature, taking special delight in flower-painting. Leaving school, after four years with an engineer he found the work uncongenial and gave it up. In 1832 he entered the office of Mr. Matthew Habershon, and became an enthusiastic student of Gothic. From 1836 to 1840, while with Mr. John Brown, of Norwich, he visited and sketched the Gothic buildings of the eastern counties. The first number of his *Gothic Ornament* appeared in 1846, the drawings being made on the spot from ladders and other inconvenient positions, and transferred to zinc plates by the author himself. The work was completed in 1850. *Details of Gothic Ornament* was commenced in 1852 and finished in 1856. In 1858 he read a Paper at the Institute on "Natural and Architectural Foliage," and in 1865 one on "Art Foliage." In 1865 he published in book form a series of articles and illustrations on "Art Foliage," a second edition of which was called for and appeared in 1878. His last book, *Mediæval Foliage*, was published in 1874. Through the initiation and exertions of Mr. J. Osborne Smith [*F.*], a fund was raised to purchase the original sketches and drawings prepared for these works in order to present them to the Library of the Institute. The presentation was formally made on behalf of the subscribers by Mr. Osborne Smith at the General Meeting of the Institute, 17th February 1902 [JOURNAL, 22nd February 1902]. Mr. Colling carried out several important architectural works, and a list of them is given in the interesting notes of Mr. Colling's career contributed by Mr. Osborne Smith to the JOURNAL of the 22nd February 1902.

The decease is also announced of HENRY GEORGE LUFF, of Devonport, elected *Associate* 1864, *Fellow* 1901, a past President of the Devon and Exeter Architectural Society, which body he represented on the Institute Council in the Session 1902–3.